^{99}Rb β^-n decay (57.8 ms) 1982Kr11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh	NDS 164, 1 (2020)	15-Feb-2020

Parent: ^{99}Rb: E=0; J^π=(3/2$^+$); $T_{1/2}$=57.8 ms *9*; Q(β^-n)=7231 *5*; %β^-n decay=19.1 *18*

^{99}Rb-$T_{1/2}$: Weighted average of 59 ms *4* (1978Ko29); 59 ms *4* (1979Pe01); 52 ms *5* (1983Wo10); 59 ms *1* (1986ReZU); 59 ms *1* (1987PfZX); 50.3 ms *7* (1993Ru01); 59 ms *12* (2003Be05); 54.2 ms *13* (2011Ni01). The NRM is used for weighted averaging procedure. Weighted average of above values gives 54.7 ms *11* with a reduced χ^2=11; unweighted average gives 56.4 ms *13*. Other: 54 ms *4* (Adopted Levels for ^{99}Rb in ENSDF database, July 2017 update).

^{99}Rb-Q(β^-n): From 2017Wa10.

^{99}Rb-%β^-n decay: %β^-n=19.1 *18*, weighted average of 20.5 *30* (1987PfZX, also 13.0 *15* in this work), 20.7 *23* (1986ReZU), and 15 *3* (1979Pe01).

1982Kr11: Rb isotopes were produced via ^{238}U(n,X) reactions with neutron beams from the high-flux reactor in Grenoble and reaction products separated by the alkali isotope separator OSTIS. γ rays and electrons were detected with Ge(Li) detectors and neutrons were detected with three ^{3}He ionization chambers. Measured Eγ, Iγ, $\beta\gamma$-coin, nγ-coin, $\gamma\gamma$-coin. Deduced levels, delayed-neutron branching ratios. Comparisons with theoretical calculations.

Others:
%β^-n and $T_{1/2}$: 1993Ru01, 1986ReZU (also 1986ReZS, both supersede 1986Wa17), 1984Pf01, 1983Re10, 1979Pe01, 1971Tr02.

Additional information 1.

^{98}Sr Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[‡]
0.0	0$^+$	0.653 s *2*
144.6 *5*	2$^+$	
215.5 *7*	0$^+$	
434.0 *7*	4$^+$	
871.2 *7*	(2$^+$)	
1224.4 *7*	(0$^+$,1)	

† From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=0.5 keV.
‡ From the Adopted Levels.

γ(^{98}Sr)

Iγ normalization, I(γ+ce) normalization: From I(γ+ce)(144.6γ)+I(γ+ce)(215.5γ)=100−(β^-n feeding to g.s. of 29% *7* from 1982Kr11)=71 *7*.

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[‡]	α[@]	I$_{(\gamma+ce)}$[#]	Comments
70.9	6	215.5	0$^+$	144.6	2$^+$	E2	3.57		α(K)=2.86; α(L)=0.579; α(M)=0.0979; α(N)=0.01098; α(O)=0.000348
144.6	100	144.6	2$^+$	0.0	0$^+$	E2	0.263		α(K)=0.228; α(L)= 0.0317; α(M)=0.00534; α(N)=0.000631; α(O)=3.03×10^{-5}
215.5[&]		215.5	0$^+$	0.0	0$^+$	E0		5	ce(K)/(γ+ce)=0.844
289.4	30	434.0	4$^+$	144.6	2$^+$	E2	0.0218		α(K)=0.0191; α(L)=0.00230; α(M)=0.000385; α(N)=4.71×10^{-5}; α(O)=2.70×10^{-6}
655.3[&]	9	871.2	(2$^+$)	215.5	0$^+$				
726.6	2	871.2	(2$^+$)	144.6	2$^+$				
1079.8	10	1224.4	(0$^+$,1)	144.6	2$^+$				

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^{99}Rb β^-n decay (57.8 ms) 1982Kr11 (continued)

$\gamma(^{98}Sr)$ (continued)

† From 1982Kr11. Quoted values of intensities are relative to I(144.6γ)=100.
‡ From Adopted Gammas.
# For absolute intensity per 100 decays, multiply by 0.103 *14*.
@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
& Placement of transition in the level scheme is uncertain.

Delayed Neutrons (^{98}Sr)

E(^{98}Sr)	I(n)†‡
0.0	29 *7*
144.6	35 *7*
215.5	2 *2*
434.0	20 *5*
871.2	7 *3*
1224.4	7 *3*

† From 1982Kr11.
‡ For absolute intensity per 100 decays, multiply by 0.191 *18*.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)